Application Software Development Tools for Mobile Platform

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Contributions & Scope

- Propose software development framework and tool for developing mobile applications

- Scope at J2ME applications

- Provide SDK and visual tools for automatic code generation targeting at UI, RPG, and network applications

Motivation

- ❑ *Wireless communication is becoming popular*, eg. Cell phones, PDA and not expensive.

- ❑ Applications on the devices are important to attract customer for buying new services and devices.

- ❑ Variety of applications are needed, esp. for future 3G phone systems.

- ❑ Many handset company provides different hardware and operating systems as well as SDKs for attracting programmers for developing applications for their platform.

  - ➢ Standardized software for mobile platform becomes important, emerging of Java standard, and other JSR ...

Backgrounds

❑ There are varieties of OS and languages for mobile systems,e.g symbian, Window CE,..C++/Java..

❑ Java-built-in is one of the common features in existing phones.

Backgrounds

Model	Nokia 3600	Nokia 3610	Nokia 3650	Nokia 5100	Nokia 5210
SW Series	Series 60	Series 30	Series 60	Series 40	Series 20
Technology	Symbian OS 6.1 Java MIDP, MMS	n/a	Symbian OS 6.1, Java MIDP, MMS	Java MIDP, MMS	n/a
Connectivity	Bluetooth, Infrared	n/a	Bluetooth, Infrared	Infrared, USB	Infrared
Resolution	176 x 208	96 x 65	176 x 208	128 x 128	84 x 48
Color Depth	4096 Colors (12 bit)	Mono-chrome	4096 Colors (12 bit)	4096 Colors (12 bit)	Mono-chrome

	OS	Profile	display
9210i series 80	Symbian	Pjava MIDP	color 640x200 pixel resolution
7650 series 60	Symbian	MIDP	color 176x208 pixel resolution
7210 series 40	Nokia	MIDP	color 128x128 pixel resolution
6310i series 30	Nokia	MIDP	b/w 96x65 pixel resolution

Backgrounds

Variety of tools for developing mobile applications.

- ☐ BREW for CDMA 2000

- ☐ WTK for J2ME

- ☐ IDE tools are such as SUN ONE STUDIO ,Jbuilder,Code Warrior etc.

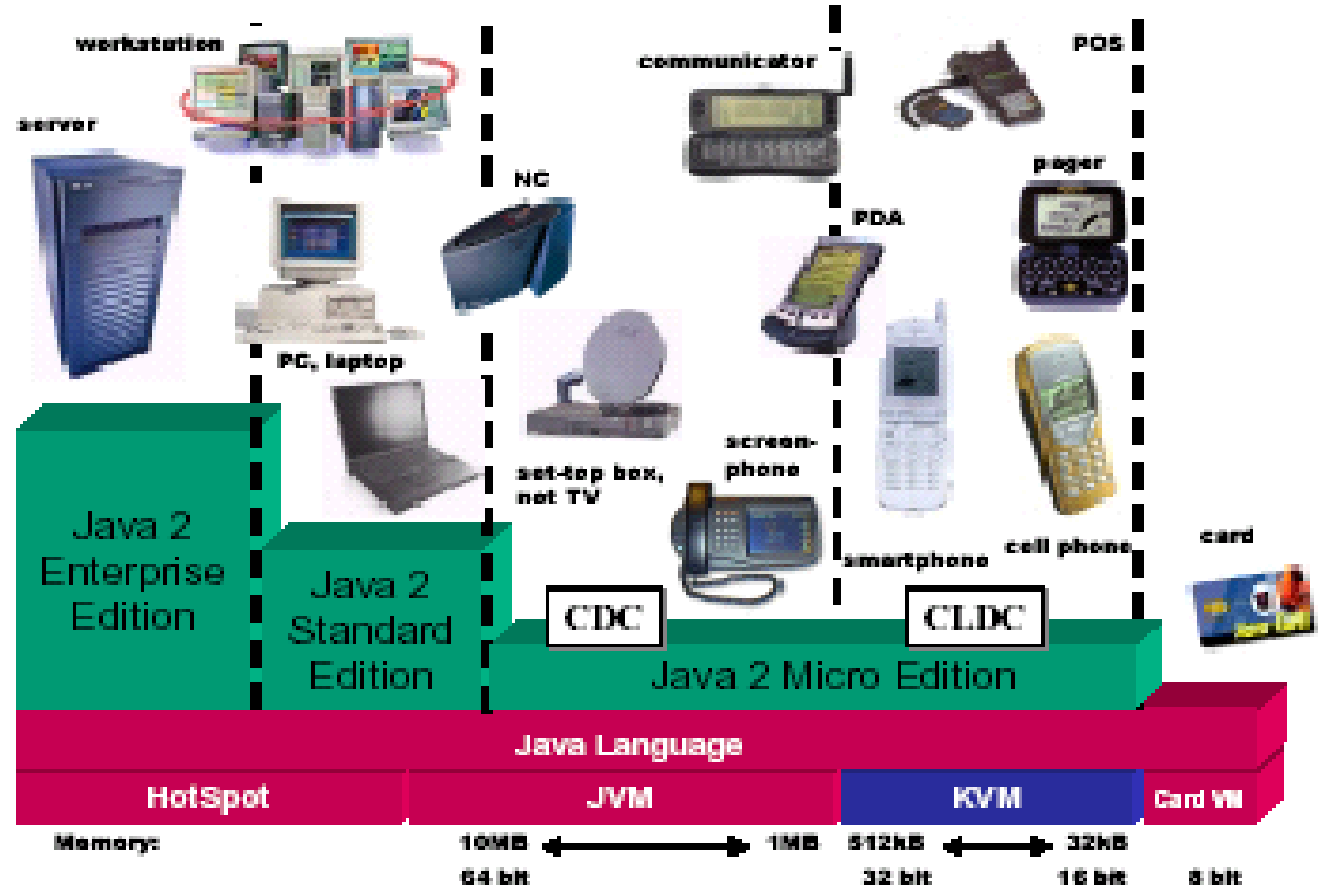- ☐ Smart Editors: Forte, Jcreator .

Backgrounds

Visual Tools & Automatic code generation

- ❑ Visual C++/C++ BuilderX
- ❑ Jbuilder
- ❑ Visual Component Library (J2ME)
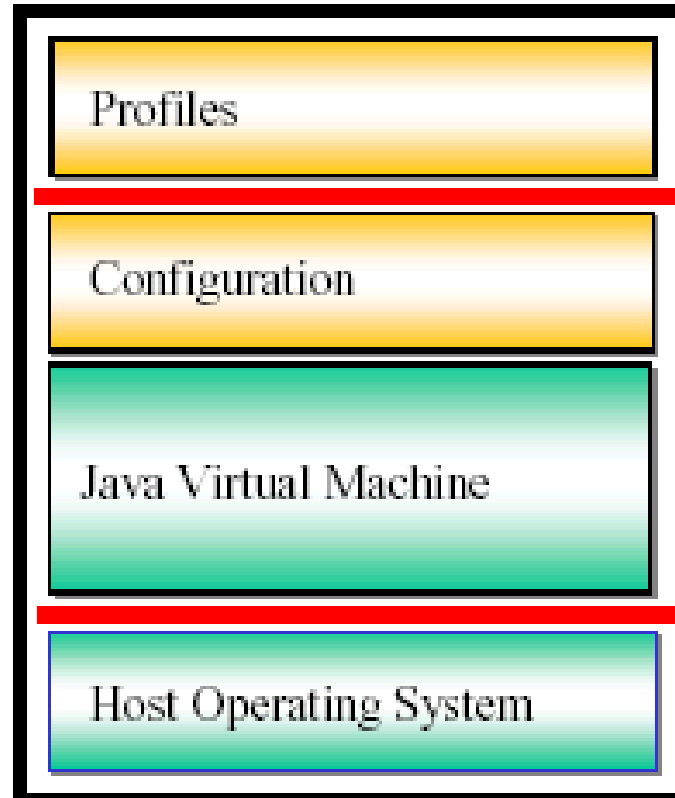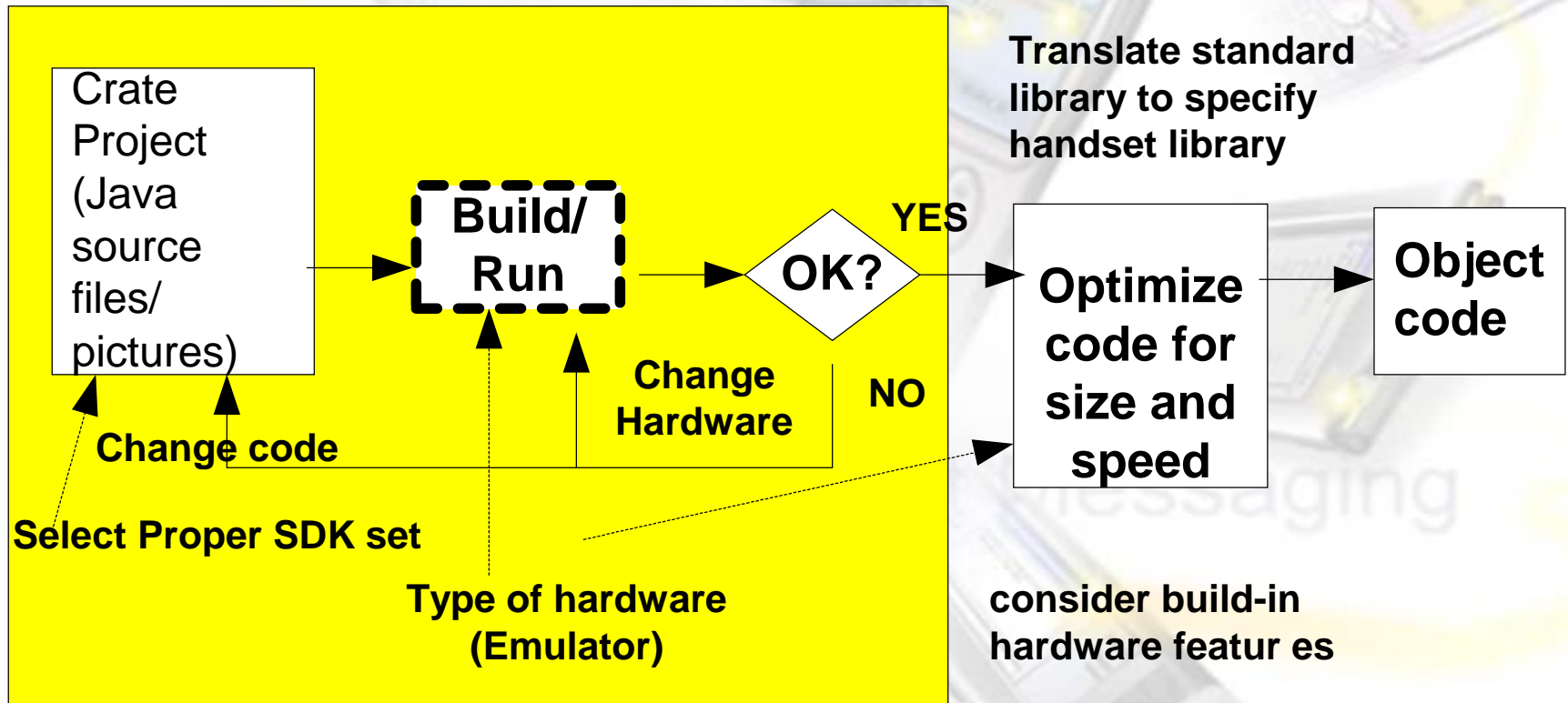- ❑ Simplicity (J2ME)

Backgrounds

Families of Java
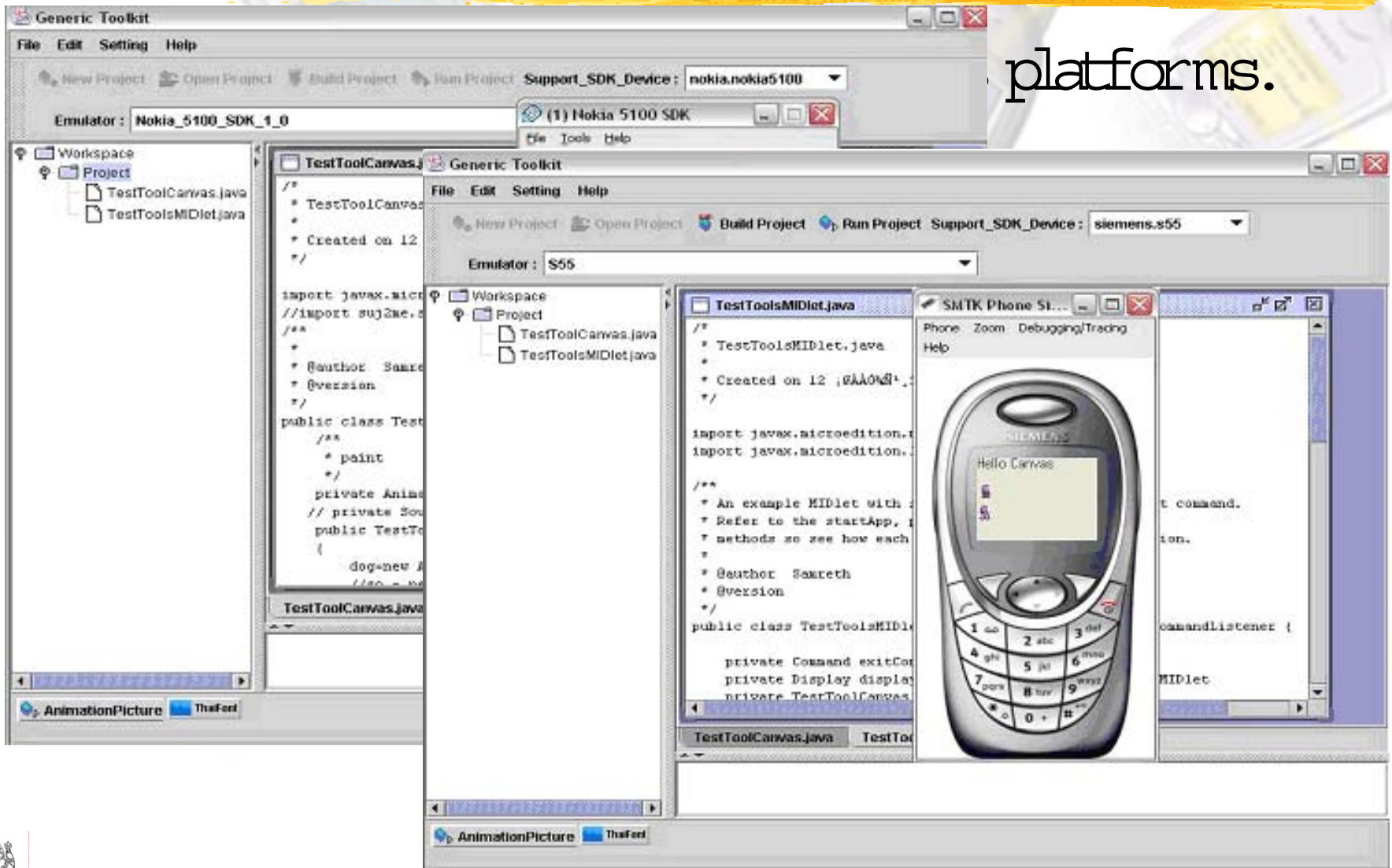
Backgrounds

Where Java lies.

Framework for development

Crate Project (Java source files/ pictures)

Build/ Run

OK?

YES

NO

Change Hardware

Change code

Select Proper SDK set

Type of hardware (Emulator)

Translate standard library to specify handset library

Optimize code for size and speed

Object code

consider build-in hardware featur es

IDE and Generic SDK

platforms.

Generic SDK

❑ A set of generic libraries where the code can be run on various platforms.

❑ Enable the addition of library set and package which can be extension to Java package or can be tuned for specific handset.

Generic SDK

❑ Organization of generic SDK
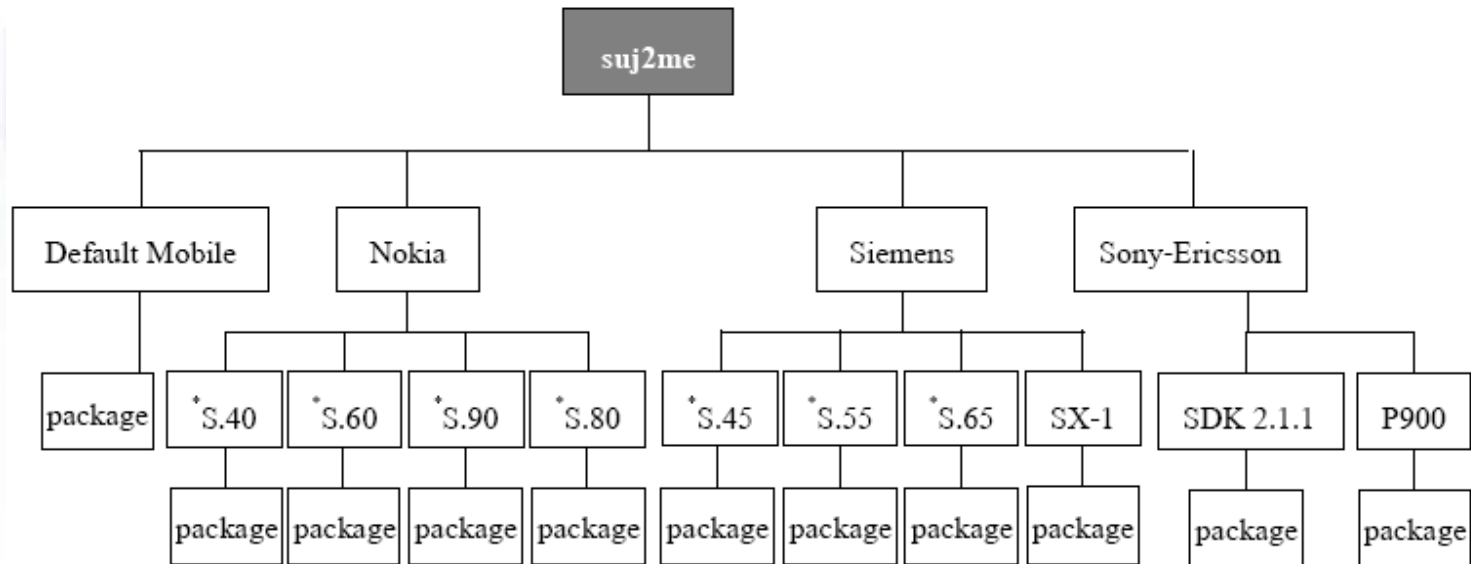
Consist of standard J2ME and others.

Current version of SDK

- Upgrade for MIDP 2.0
- Implementation for some MIDP 2.0 package are available (this is useful when the phone is equipped with MIDP 1.0)
- Consists of main packages such as
  - Game: for Sprite, Layer etc.
  - Picture Operation
  - ThaiFont
  - Shape
  - Image Processing (under development)
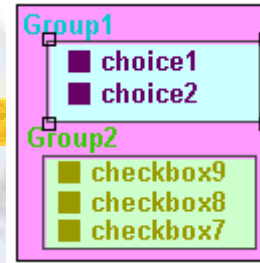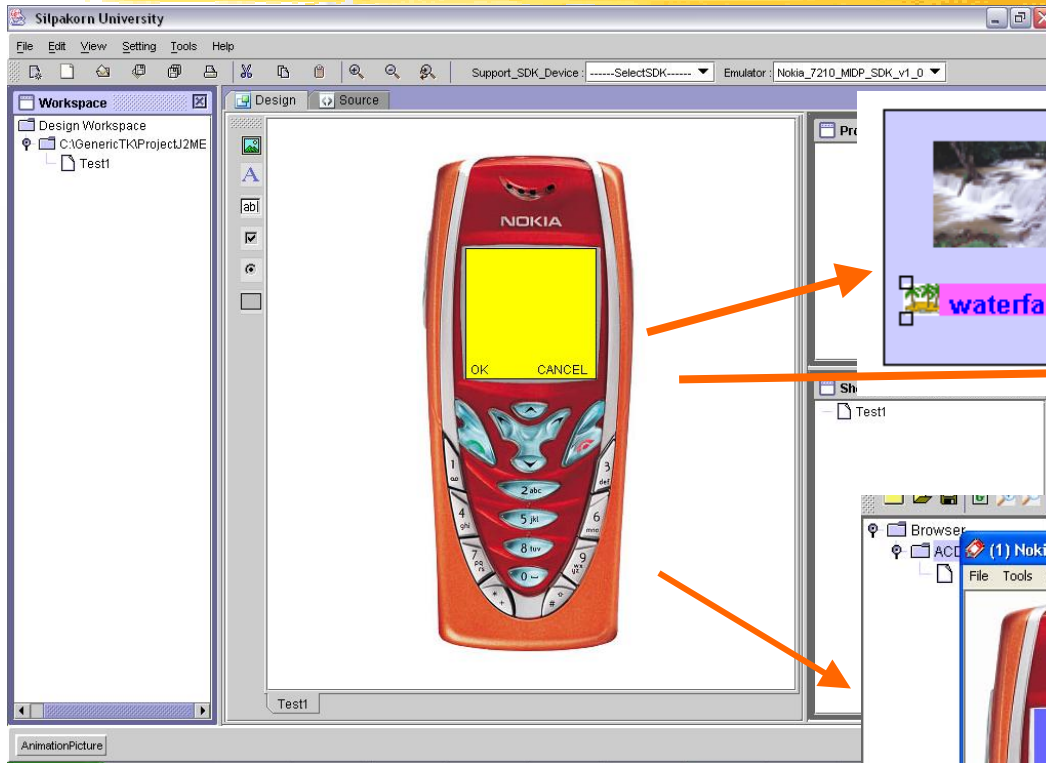
Visual J2ME UI Designer

☐ Use package shape and Thai Font

☐ Automatic code generation

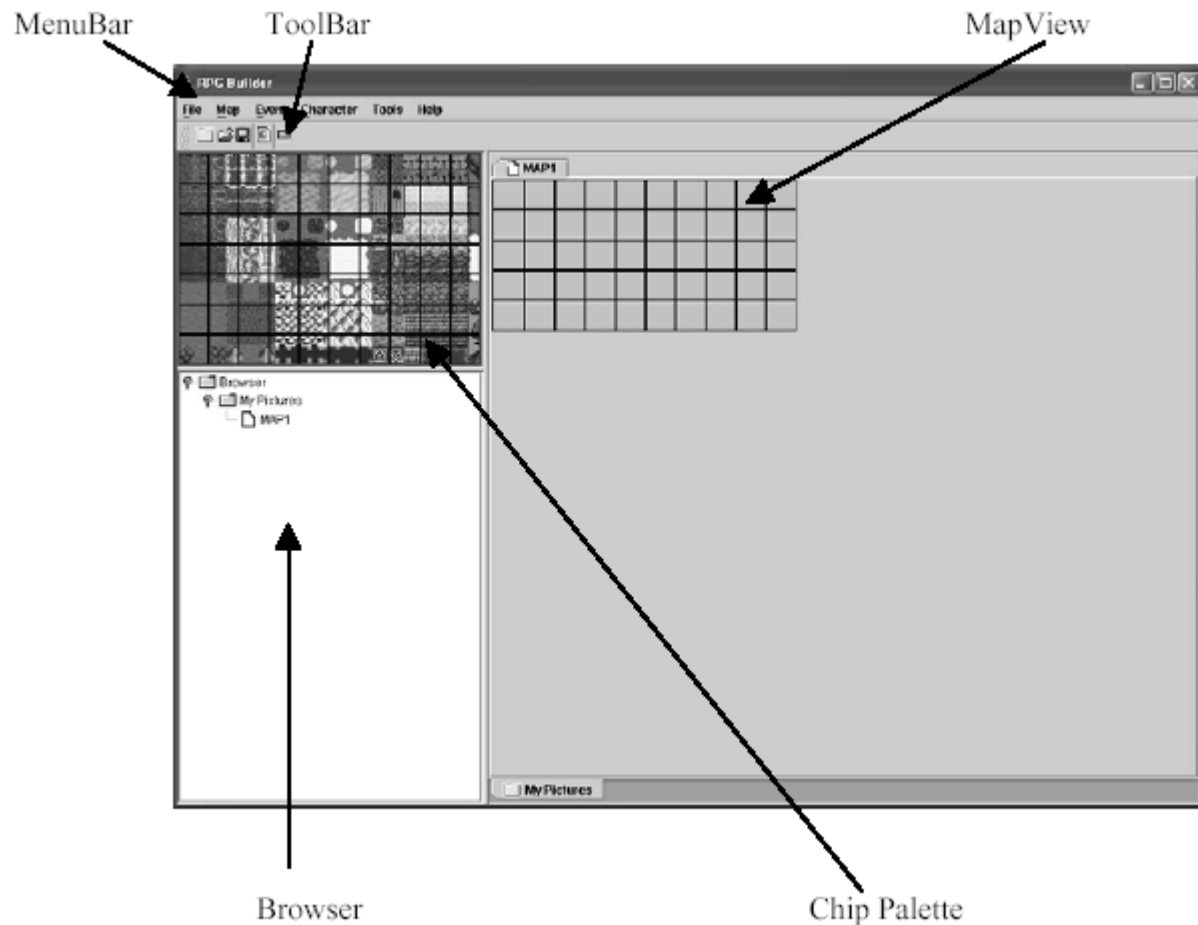☐ Code can be modified and recompiled

Visual J2ME UI Designer
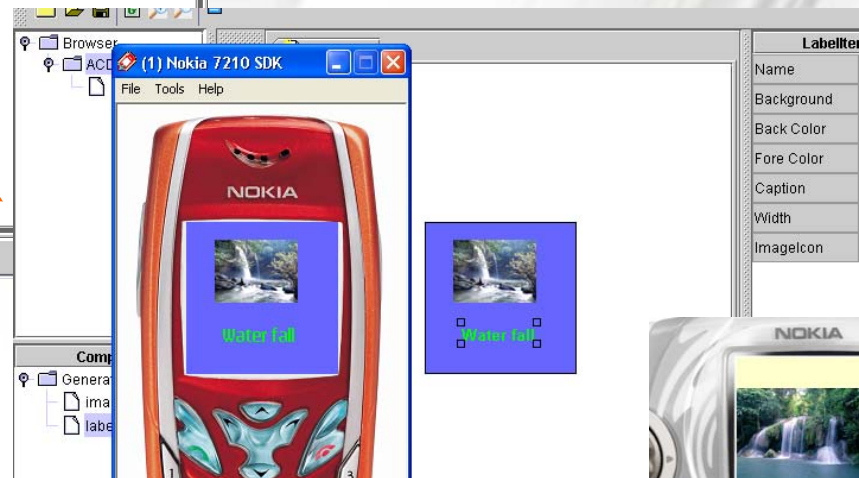
RPG Game Designer

- Use package Picture and Game
- Automatic code generation
- Generate necessary classes for Event, Map, Characters etc.

RPG Game Designer

Network Application Designer

- Contain architecture and message design panels

- Generate code for server and client sides

- Based on MIDP 2.0 network class

- Also use Thread package

Network Application Designer

Summary

- Develop SDK and IDE tools to aid software development for mobile applications
- IDE tools feature
  - Use generic SDK
  - Editor for code editing
  - Automatic code generation based on J2ME
  - Built-in emulator for testing
- Current Visual Tools for UI, RPG, and network applications.